

CLAIMS

1. An electronic trigger comprising:
a first relay having a trigger output;
a second relay coupled to the first relay that selectively enables the first relay; and
a controller coupled to the first relay and to the second relay, wherein the controller provides an enable signal to the second relay to enable the first relay, and provides a signal to the first relay for providing the trigger output when the first relay is enabled.
2. The electronic trigger of claim 1 wherein the first relay comprises a normally open mechanical switch.
3. The electronic trigger of claim 1 wherein the controller is coupled to user inputs.
4. The electronic trigger of claim 3 wherein the user inputs comprise an enable arm switch, an enable count switch and an abort switch.
5. The electronic trigger of claim 4 wherein the enable arm switch causes the controller to enter a safe mode loop.
6. The electronic trigger of claim 5 wherein the enable count switch causes the controller to count down from a predetermined number.
7. The electronic trigger of claim 1 and further comprising a display coupled to the controller.

8. The electronic trigger of claim 1 and further comprising a current driver coupled between the controller and the second relay for providing a current to enable the first relay.
- 9 The electronic trigger of claim 1 and further comprising a third relay coupled between the controller and the first relay for switching current to the first relay under control of the controller, wherein the current becomes the output signal of the first relay.
10. An electronic trigger comprising:
a blast relay having an output for triggering a blast cap;
means for activating the blast relay; and
means for providing a signal to the blast relay for providing the output for triggering the blast cap.
11. The electronic trigger of claim 10 and further comprising means for displaying the status of the controller.
12. An electronic trigger comprising:
a set of user inputs comprising an enable arm switch, an enable count switch and an abort switch;
a first relay having an output for triggering a blast cap, wherein the first relay has a switch and a field generator;
a second relay coupled to the first relay for enabling the field generator to activate the first relay switch;
a third relay coupled to the first relay for providing a signal that is passed through the first relay switch as the output signal when the first relay switch is activated;
a display; and

a controller that receives the user inputs, provides status and countdown signals to the display, and controls the second and third relays.

13. A method for controlling an output signal provided to a device, the method comprising:

- enabling a relay;

- providing a signal to the relay that is provided as the output signal when the relay is enabled;

- disabling the relay after a predetermined time; and

- removing the signal to the relay.

14. The method of claim 13 wherein the relay is disabled prior to stopping providing the signal to the relay.

15. The method of claim 13 wherein the predetermined time is approximately three seconds.

16. The method of claim 13 and further comprising counting down by seconds from a predetermined number of seconds prior to enabling the relay.

17. An electronically implemented method for controlling an output signal provided to a device, the method comprising:

- entering a safe mode loop;

- entering an enable loop;

- entering a countdown loop;

- enabling a relay after a predetermined time in the countdown loop;

- providing a signal to the relay that is provided as the output signal when the relay is enabled;

- disabling the relay after a predetermined amount of time; and

- removing the signal to the relay.

18. The method of claim 17 and further comprising providing status signals to a display.

19. The method of claim 17 wherein the enable loop is entered after detecting actuation of an enable arm switch.

20. The method of claim 19 wherein the count down loop is entered following the enable loop, and in response to detection of actuation of an enable count switch.

21. The method of claim 19 wherein the relay is disabled and the signal to the relay is stopped upon detection of actuation of an abort switch.

22. The method of claim 16 and further comprising firing a blasting while the relay is enabled and the signal is provided to the relay.

23. A system for controlling an output signal provided to an explosive device, the method comprising:

means for enabling a relay;

means for providing a signal to the relay that is provided as the output signal when the relay is enabled;

means for disabling the relay after a predetermined time; and

means for removing the signal to the relay.